

WHAT IS CLAIMED IS:

1. A semiconductor capacitor device, comprising:
 - two first MIM capacitors formed on a semiconductor substrate and each having a lower electrode,
5 a first capacitor dielectric film, and an upper electrode,
the first MIM capacitors being electrically connected in inverse parallel with each other; and
 - two second MIM capacitors formed on the semiconductor substrate and each having a lower electrode,
10 a second capacitor dielectric film, and an upper electrode,
the second MIM capacitors being electrically connected in inverse parallel with each other and associated with respective first MIM capacitors,
the first and associated second MIM capacitors
15 are electrically connected in inverse parallel with each other; and
 - the second capacitor dielectric film having a composition different from that of the first capacitor dielectric film.
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2. The semiconductor capacitor device according to Claim 1,
voltage dependences of capacitances of the first
and second MIM capacitors are expressed by respective

quadratics of voltage, and coefficients of second-order terms of the quadratics have opposite signs.

3. The semiconductor capacitor device according to
5 Claim 2, wherein the coefficients of the second-order terms of the quadratics for the first and second MIM capacitors have the same magnitude.

4. The semiconductor capacitor device according to
10 Claim 1, wherein the first and second MIM capacitors share a metal layer that serves as the upper electrode of the first MIM capacitor and the lower electrode of the second MIM capacitor.

15 5. The semiconductor capacitor device according to Claim 1, wherein one of the first and second capacitor dielectric films is formed of a silicon oxide film and the other of the first and second capacitor dielectric films is formed of a silicon nitride film.

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6. The semiconductor capacitor device according to Claim 1, the second MIM capacitor and the first MIM capacitor are laid one on the other.

7. The semiconductor capacitor device according to Claim 4, the lower electrode and the first capacitor dielectric film of the first MIM capacitor, the metal layer, and the second capacitor dielectric and the upper electrode
5 of the second MIM capacitor are stacked in this order.

8. The semiconductor capacitor device according to claim 5, wherein the silicon oxide film is of a thickness of 35 nm and the silicon nitride film is of a thickness of
10 65 nm.

9. The semiconductor capacitor device according to claim 1, wherein the two first MIM capacitors have the same shape and size, and the two second MIM capacitors have the
15 same shape and size.